

Trend Study 16A-4-02

Study site name: Wash Canyon.

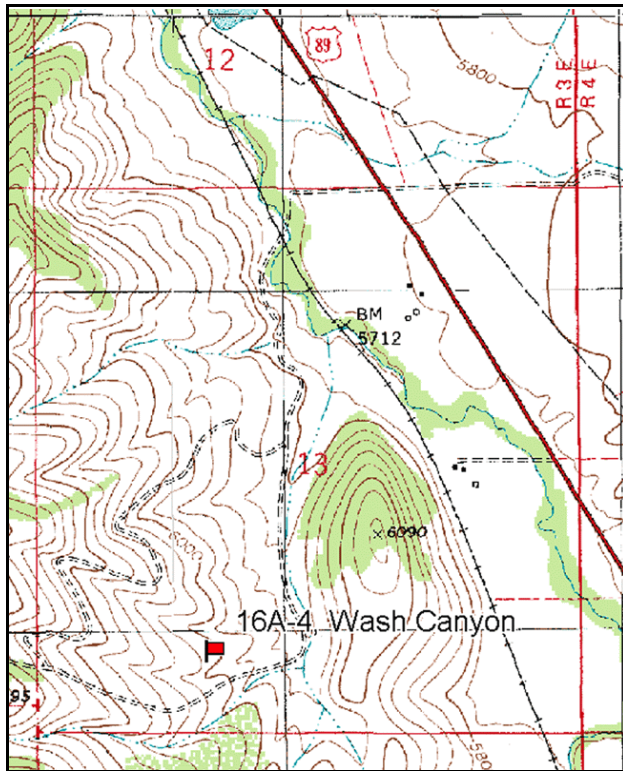
Vegetation type: Mountain Brush.

Compass bearing: frequency baseline 315 degrees magnetic (lines 3-4 @ 49°M).

Frequency belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft). Rebar: belt 1 on 2ft.

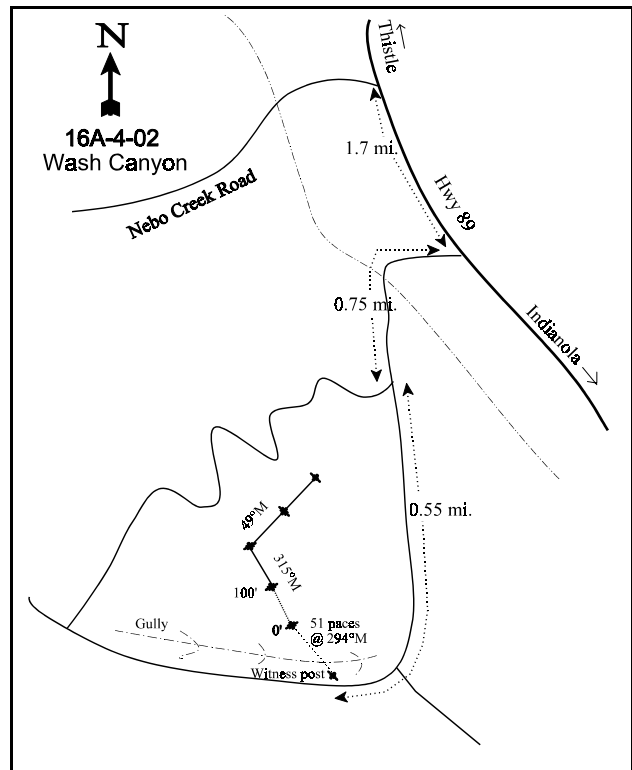
LOCATION DESCRIPTION

From the intersection of the Nebo Creek Road and U.S. 89, proceed south on U.S. 89 for 1.7 miles (0.5 miles from mile marker 269) to a road to the west. Turn right and proceed westerly for 0.75 miles, crossing a stream at 0.25 miles and an old railroad bed at 0.30 miles in route to a faint fork in the road. Take the left fork and proceed 0.55 miles to a half high witness post on the north side of the road. From the witness post, walk 51 paces at an azimuth of 295 degrees magnetic to the 0-foot baseline stake (the baseline stake is 17 paces away from lone juniper at an azimuth of 56 degree TRUE). The 0-foot baseline stake is a green post located just north of a clump of oak.



Map Name: Spencer Canyon

Township 11S, Range 3E, Section 13



Diagrammatic Sketch

GPS: NAD 27, UTM 12S 4411893 N 453768 E

DISCUSSION

Wash Canyon - Trend Study No. 16A-4

The Wash Canyon study samples deer winter range located in Lower Wash Canyon. The study is on Division property surrounded by privately owned land. Elevation of the site is approximately 6,000 feet. Slope is 21% with a northeast aspect. The area is a mountain brush site that currently supports a moderately low density of mountain big sagebrush associated with smaller numbers other palatable species. Deer and elk pellet groups were abundant in 1997 with quadrat frequencies of 58% and 21% respectively. Some cattle use and sign was also evident in 1997. Antler drops and winter killed deer were encountered during the initial 1983 reading. A pellet group transect read along the study site baseline in 2002 estimated heavy deer use at 169 deer days use/acre (417 ddu/ha). Elk use was estimated at 12 days use/acre (30 edu/ha). Most of the deer and elk pellet groups were from winter use.

Soil on the site is deep with an effective rooting depth of over 15 inches. Soil texture is a loam with a neutral pH of 6.8. Parent material appears to be limestone. Ground cover is highly variable, and many areas of bare soil and pavement are subject to erosion. Percent cover of bare ground is high, estimated at 32% in 2002. However, protective ground cover still appears adequate to limit erosion and the erosion condition classification was determined as stable in 2002.

Browse composition is diverse, but the only abundant preferred species is mountain big sagebrush. Invasion by large numbers of stickyleaf low rabbitbrush and broom snakeweed appears to have displaced some of the original browse population. The mountain big sagebrush, which was previously classified as basin big sagebrush (*Artemisia tridentata tridentata*), has characteristics more common of mountain big sagebrush (*A. tridentata vaseyana*). There appears to be some hybridizing between the two subspecies. For this report, all big sagebrush will be classified as mountain big sagebrush. Its density was estimated at 1,800 plants/acre in 1997 and 1,980 plants/acre in 2002. Use was light in 1983, more moderate to heavy in 1989, and light in 1997. In 2002, use was again rated as moderate to heavy. Heavier use occurs on plants with more mountain big sagebrush characteristics (*A. tridentata vaseyana*). Vigor is generally good and the number of decadent plants is within acceptable limits (18%).

Several other preferred browse species occur in small numbers. These include serviceberry, true mountain mahogany, and antelope bitterbrush. Due to their low numbers and high palatability, use of these species has been heavy. Bitterbrush is especially hard hit. Heavy use has increased from 29% of the bitterbrush sampled in 1997 to 83% in 2002. There was no apparent flowering or seed production in 2002 and many bitterbrush plants have been hedged to the point of decadence. No plants were classified as decadent in 1997, but 67% were considered decadent in 2002.

The undesirable increasers, stickyleaf low rabbitbrush and broom snakeweed, were abundant and increased in density between 1983 and 1989. Numbers declined slightly in 1997 and age class compositions indicated mostly mature populations. Due to drought conditions, density of broom snakeweed has declined from 6,420 plants/acre in 1997 to only 1,600 plants/acre in 2002. The population will likely continue to decline since 84% of the plants sampled were classified as decadent and 91% of the decadent snakeweed appear to be dying. Stickyleaf low rabbitbrush has remained stable in density but 34% of the population was classified as decadent in 2002 and about half of those appear to be dying.

The herbaceous understory is diverse yet not particularly abundant. Cheatgrass was the most abundant grass sampled in 1997, providing 40% of the total grass cover. Abundant perennial species included bluebunch wheatgrass, Indian ricegrass, and Kentucky bluegrass. Due to drought conditions in 2002, cheatgrass declined significantly in nested frequency and cover which dropped from 6% to less than 1%. Bluebunch wheatgrass increased significantly in nested frequency and all other perennial grasses remained stable.

Forbs are abundant with 33 total species encountered in 1997. Most species occur only occasionally with a few important species like Lewis flax and scarlet globemallow being fairly abundant. Total forb cover was estimated at only 4% in 1997. Drought conditions in 2002 caused a decline in perennial forb cover and sum of nested frequency. The once abundant blue flax was not encountered.

1983 APPARENT TREND ASSESSMENT

Soil conditions are marginal. The dispersion of effective ground cover is highly variable and has allowed an excessive rate of soil erosion to continue. Vegetative trend also appears to be declining. The most palatable browse species appear to be declining and are gradually being replaced by broom snakeweed and stickyleaf low rabbitbrush. Herbaceous composition and density is fair but include few desirable, succulent or highly productive species.

1989 TREND ASSESSMENT

Soil trend appears stable. Percent bare ground and litter declined. Rock and pavement cover increased from 12% to 24%. Low rabbitbrush and snakeweed still have the highest densities and have increased greatly. They remain mainly mature populations, with approximately 20% young plants. Young sagebrush are common and comprise 57% of the sagebrush population. The mature sagebrush are moderately to heavily hedged. The number of mature shrubs declined to 733 plants/acre due to an increase in the number of sagebrush classified as decadent. Sagebrush cover averages about 8%. Except for a slightly increased number of bitterbrush counted, other browse species were not well sampled on the density plots. They are all heavily hedged and display poor vigor. Plant numbers and species composition have improved slightly within the herbaceous community. Bluebunch wheatgrass, needle-and-thread, and Kentucky bluegrass increased in sum of nested frequency. There is a high diversity of forbs. Composition is unchanged and there was a slight increase in the sum of nested frequency for forbs.

TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - up slightly (4)

1997 TREND ASSESSMENT

Trend for soil is up with a decline in percent bare ground from 30% to 14% between 1989 and 1997. Litter cover increased slightly while rock and pavement cover declined. Sum of nested frequency for perennial grasses increased slightly. Density of the increasers, stickyleaf low rabbitbrush and broom snakeweed, have declined 32% and 15% respectively, however they are still abundant. Mountain big sagebrush shows slightly higher decadence (14% to 28%) even with lighter use. It would appear that with 60% of the decadent plants being classified as dying, that there will continue to be some losses to the sagebrush population. Trend for key browse, mountain big sagebrush which makes up 37% of the browse cover, is slightly down. Trend for the herbaceous understory is stable for grasses but down for forbs. Sum of nested frequency of forbs declined 36%. Since grasses comprise 79% of the herbaceous cover, overall trend is considered stable.

TREND ASSESSMENT

soil - up (5)

browse - slightly down (2)

herbaceous understory - stable (3)

2002 TREND ASSESSMENT

Trend for soil is down slightly due to an increase in cover of bare ground and a decline in vegetation cover. There is still adequate protective ground cover to prevent most erosion and the erosion condition classification was determined as stable in 2002. Trend for browse is mixed. The key browse species, mountain big sagebrush has a stable population density, generally good vigor, and moderately low decadency. However, use is heavy with 74% of the sagebrush sampled displaying moderate or heavy use. Recruitment is poor with no seedlings and few young sampled in 2002. Other palatable shrubs, serviceberry, mountain mahogany, and bitterbrush, occur in low densities. They show heavy use and increased decadence. The undesirable increaser broom snakeweed, has declined by 75% and the remaining population is mostly decadent. Another increaser, stickyleaf low rabbitbrush, is also showing the effects of drought with decadence increasing from 6% to 34% of the population. Taking all of these factors into consideration, trend for browse is stable. Trend for the herbaceous understory is stable. Sum of nested frequency of perennial grasses has remained similar to 1997 while annual grasses declined significantly. Composition has changed somewhat. Nested frequency of Kentucky bluegrass has declined significantly while bluebunch wheatgrass increased significantly. All other perennial grasses remained stable. Perennial forbs are diverse but don't provide much forage. They have declined considerably in nested frequency. Since perennial grasses make up 80% of the total herbaceous cover, the herbaceous trend is considered stable.

TREND ASSESSMENT

soil - slightly down (2)

browse - stable (3)

herbaceous understory - stable (3)

HERBACEOUS TRENDS --

Herd unit 16A, Study no: 4

Type	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'83	'89	'97	'02	'83	'89	'97	'02	'97	'02
G	Agropyron spicatum	_a 19	_a 31	_a 76	_b 113	8	13	26	45	2.19	4.51
G	Bromus japonicus (a)	-	-	-	4	-	-	-	2	-	.01
G	Bromus tectorum (a)	-	-	_b 270	_a 157	-	-	86	63	6.14	.70
G	Dactylis glomerata	-	-	1	-	-	-	1	-	.00	-
G	Melica bulbosa	-	-	-	2	-	-	-	1	-	.15
G	Oryzopsis hymenoides	_c 145	_{bc} 128	_a 86	_a 87	51	53	37	37	1.75	3.75
G	Poa bulbosa	-	-	-	11	-	-	-	4	-	.09
G	Poa fendleriana	-	-	4	-	-	-	1	-	.15	-
G	Poa pratensis	_a 43	_b 74	_a 77	_a 25	17	27	25	11	3.04	.22
G	Poa secunda	_a 3	_a 3	_b 47	_b 38	1	1	20	18	.86	.46
G	Sitanion hystrix	_b 35	_a 4	_b 49	_b 34	17	2	19	19	.58	.84
G	Stipa comata	_a 19	_b 75	_a 25	_a 22	8	35	9	9	.61	1.52
Total for Annual Grasses		0	0	270	161	0	0	86	65	6.14	0.70
Total for Perennial Grasses		264	315	365	332	102	131	138	144	9.19	11.58
Total for Grasses		264	315	635	493	102	131	224	209	15.34	12.29
F	Agoseris glauca	-	-	4	8	-	-	2	4	.01	.04
F	Alyssum alyssoides (a)	-	-	_a 107	_b 185	-	-	44	65	.29	.80
F	Allium spp.	_{ab} 6	_a 1	_b 13	_a -	4	1	7	-	.03	-

Type	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'83	'89	'97	'02	'83	'89	'97	'02	'97	'02
F	<i>Antennaria rosea</i>	-	-	1	1	-	-	1	1	.03	.00
F	<i>Aster chilensis</i>	-	-	1	4	-	-	1	2	.00	.01
F	<i>Astragalus convallarius</i>	_b 30	_b 35	_a 9	_a 1	16	17	5	1	.07	.03
F	<i>Astragalus</i> spp.	-	-	-	2	-	-	-	1	-	.00
F	<i>Astragalus utahensis</i>	-	-	1	-	-	-	1	-	.03	-
F	<i>Castilleja chromosa</i>	5	-	-	-	2	-	-	-	-	-
F	<i>Calochortus nuttallii</i>	4	1	5	-	1	1	3	-	.01	-
F	<i>Chaenactis douglasii</i>	_b 29	_a 4	_a 1	_a -	14	2	1	-	.00	-
F	<i>Chenopodium</i> spp. (a)	-	-	3	-	-	-	1	-	.00	-
F	<i>Cirsium</i> spp.	_b 84	_b 56	_a 18	_a 15	40	28	11	8	.17	.24
F	<i>Collomia linearis</i> (a)	-	-	9	1	-	-	4	1	.02	.00
F	<i>Comandra pallida</i>	3	3	2	-	3	2	1	-	.00	-
F	<i>Collinsia parviflora</i> (a)	-	-	_a 3	_b 84	-	-	1	32	.00	.23
F	<i>Crepis acuminata</i>	2	4	3	-	1	2	1	-	.00	-
F	<i>Cryptantha</i> spp.	12	28	13	11	8	11	6	7	.10	.08
F	<i>Descurainia pinnata</i> (a)	-	-	_b 39	_a 1	-	-	17	1	.11	.00
F	<i>Epilobium brachycarpum</i> (a)	_a -	_a -	_b 11	_{ab} 2	-	-	5	2	.05	.01
F	<i>Erigeron divergens</i>	_a -	_b 5	_a 1	_a -	-	3	1	-	.00	-
F	<i>Erigeron pumilus</i>	6	-	-	-	2	-	-	-	-	-
F	<i>Eriogonum racemosum</i>	-	-	-	3	-	-	-	2	.00	.06
F	<i>Eriogonum umbellatum</i>	_{bc} 9	_c 14	_{ab} 2	_a 1	5	7	2	1	.03	.00
F	<i>Hackelia patens</i>	36	21	37	36	17	11	17	17	.36	.33
F	<i>Lathyrus brachycalyx</i>	_a 21	_b 55	_a 3	_a 8	9	23	2	3	.01	.01
F	<i>Lappula occidentalis</i> (a)	-	-	5	-	-	-	2	-	.01	-
F	<i>Linum lewisii</i>	_c 125	_b 98	_b 81	_a -	58	44	37	-	.72	-
F	<i>Lithospermum ruderales</i>	_a 1	_b 10	_a -	_a 1	1	5	-	1	-	.03
F	<i>Lithophragma</i>	-	-	6	-	-	-	2	-	.30	-
F	<i>Lomatium</i> spp.	-	4	-	-	-	3	-	-	-	-
F	<i>Machaeranthera canescens</i>	3	-	3	-	2	-	1	-	.00	-
F	<i>Microsteris gracilis</i> (a)	-	-	-	2	-	-	-	1	-	.00
F	<i>Oenothera</i> spp.	2	-	2	-	1	-	1	-	.03	-
F	<i>Orobancha fasciculata</i>	-	-	3	-	-	-	1	-	.00	-
F	<i>Phlox longifolia</i>	_a 6	_b 67	_a 3	_a 5	3	34	1	3	.00	.02
F	<i>Polygonum douglasii</i> (a)	-	-	_b 19	_a 1	-	-	8	1	.06	.00
F	<i>Ranunculus testiculatus</i> (a)	-	-	_a -	_b 16	-	-	-	6	-	.05
F	<i>Schoenocrambe linifolia</i>	-	-	-	7	-	-	-	4	-	.02
F	<i>Senecio multilobatus</i>	-	2	-	-	-	2	-	-	-	-
F	<i>Sphaeralcea coccinea</i>	_b 137	_b 168	_a 88	_a 77	58	68	40	38	1.04	.98
F	<i>Taraxacum officinale</i>	2	-	1	-	1	-	1	-	.00	-

T y p e	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'83	'89	'97	'02	'83	'89	'97	'02	'97	'02
F	Tragopogon dubius	_c 49	_{ab} 28	_c 67	_a 4	25	16	32	3	.44	.04
	Total for Annual Forbs	0	0	196	292	0	0	82	109	0.56	1.11
	Total for Perennial Forbs	572	604	368	184	271	280	178	96	3.47	1.95
	Total for Forbs	572	604	564	476	271	280	260	205	4.03	3.06

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS --

Herd unit 16A, Study no: 4

T y p e	Species	Strip Frequency		Average Cover %	
		'97	'02	'97	'02
B	Amelanchier alnifolia	2	3	-	.15
B	Artemisia tridentata vaseyana	56	57	7.28	9.81
B	Cercocarpus montanus	2	1	.15	.15
B	Chrysothamnus nauseosus albicaulis	1	2	-	-
B	Chrysothamnus viscidiflorus viscidiflorus	90	86	8.12	6.80
B	Gutierrezia sarothrae	71	31	2.68	.58
B	Opuntia spp.	27	30	.73	1.15
B	Pinus edulis	1	1	-	.15
B	Purshia tridentata	7	6	.56	.42
B	Quercus gambelii	3	3	-	1.00
B	Ribes spp.	1	0	-	-
	Total for Browse	261	220	19.54	20.22

CANOPY COVER -- LINE INTERCEPT

Herd unit 16A, Study no: 4

Species	Percent Cover '02
Amelanchier utahensis	.17
Artemisia tridentata vaseyana	7.25
Chrysothamnus nauseosus hololeucus	.25
Chrysothamnus viscidiflorus viscidiflorus	4.00
Gutierrezia sarothrae	.67
Opuntia spp.	.33
Pinus edulis	.33
Purshia tridentata	.50
Quercus gambelii	.17

Key Browse Annual Leader Growth
Herd unit 16A , Study no: 4

Species	Average leader growth (in) '02
Artemisia tridentata vaseyana	1.3

Point-Quarter Tree Data
Herd unit 16A , Study no: 4

Species	Trees per Acre '02	Average diameter (in) '02
Juniperus osteosperma	39	2.6

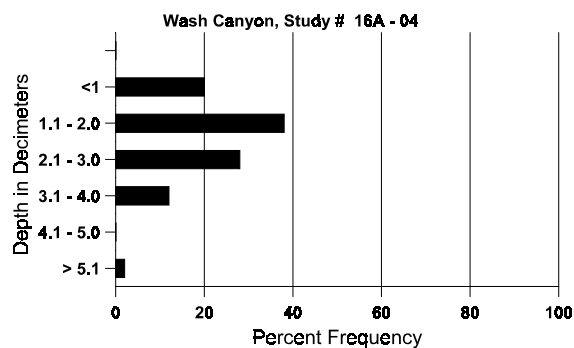
BASIC COVER --
Herd unit 16A, Study no: 4

Cover Type	Nested Frequency		Average Cover %			
	'97	'02	'83	'89	'97	'02
Vegetation	363	334	4.25	8.75	44.12	32.27
Rock	208	209	4.00	8.25	5.81	5.52
Pavement	320	310	8.00	15.50	9.30	6.17
Litter	399	378	45.25	37.75	40.90	40.87
Cryptogams	39	1	0	.25	.38	.00
Bare Ground	295	325	38.50	29.50	14.36	31.73

SOIL ANALYSIS DATA --
Herd Unit 16A, Study no: 04, Wash Canyon

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	dS/m
15.4	58.2 (16.6)	6.8	35.0	31.2	33.8	3.4	13.5	99.2	.6

Stoniness Index



PELLET GROUP FREQUENCY --

Herd unit 16A, Study no: 4

Type	Quadrat Frequency		Pellet Transect			
			Pellet Groups per Acre		Days Use per Acre (ha)	
	'97	'02	'97	'02	'97	'02
Rabbit	2	14	-	-	-	-
Elk	21	12	853	157	64 (159)	12 (30)
Deer	58	68	1044	2192	80 (198)	169 (417)
Cattle	2	1	261	9	22 (54)	1 (2)

BROWSE CHARACTERISTICS --

Herd unit 16A, Study no: 4

A G R E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Amelanchier alnifolia																		
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	02	-	-	-	-	-	-	1	-	-	1	-	-	-	20		1	
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	97	-	-	-	-	-	1	-	-	-	-	1	-	-	20	-	1	
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	9	0	
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	97	-	-	-	1	-	-	-	-	-	-	-	1	20		1		
	02	1	-	-	-	-	-	-	-	1	2	-	-	-	40		2	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'83		00%			00%			00%										
'89		00%			00%			00%										
'97		00%			50%			50%			+33%							
'02		00%			33%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'83	0	Dec:	0%			
												'89	0		0%			
												'97	40		50%			
												'02	60		67%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Artemisia tridentata vaseyana																		
Y	'83	16	-	-	-	-	-	-	-	-	16	-	-	-	533		16	
	'89	24	17	-	1	-	-	-	-	-	38	2	2	-	1400		42	
	'97	18	-	-	-	-	-	-	-	-	18	-	-	-	360		18	
	'02	1	2	-	1	-	-	-	-	-	3	-	1	-	80		4	
M	'83	32	-	-	-	-	-	-	-	-	30	2	-	-	1066	27	24	
	'89	3	10	9	-	-	-	-	-	-	20	1	1	-	733	29	32	
	'97	37	10	-	-	-	-	-	-	-	47	-	-	-	940	31	38	
	'02	17	30	27	-	-	3	-	-	-	77	-	-	-	1540	25	32	
D	'83	2	-	-	-	-	-	-	-	-	1	-	1	-	66		2	
	'89	2	2	5	1	-	-	-	-	-	7	-	3	-	333		10	
	'97	20	3	-	2	-	-	-	-	-	10	-	-	15	500		25	
	'02	5	7	4	1	-	1	-	-	-	8	-	1	9	360		18	
X	'83	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	'89	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	'97	-	-	-	-	-	-	-	-	-	-	-	-	-	400		20	
	'02	-	-	-	-	-	-	-	-	-	-	-	-	-	360		18	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
		'83			00%			00%			+32%							
		'89			39%			19%			-27%							
		'97			14%			00%			+ 9%							
		'02			39%			35%			11%							
Total Plants/Acre (excluding Dead & Seedlings)												'83	1665	Dec:	4%			
												'89	2466		14%			
												'97	1800		28%			
												'02	1980		18%			
Cercocarpus montanus																		
Y	'83	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	'89	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	'97	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
	'02	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	'83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	
	'89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	
	'97	-	-	-	-	-	1	-	-	-	1	-	-	-	20	11	56	
	'02	-	-	-	-	-	1	-	-	-	1	-	-	-	20	18	23	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
		'83			00%			00%			00%							
		'89			00%			00%			00%							
		'97			00%			50%			-50%							
		'02			00%			100%			00%							
Total Plants/Acre (excluding Dead & Seedlings)												'83	0	Dec:	-			
												'89	0		-			
												'97	40		-			
												'02	20		-			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Chrysothamnus nauseosus albicaulis																		
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	1	-	-	-	-	-	-	-	-	-	1	-	-	20	-	-	1
	02	-	2	-	-	-	-	-	-	-	-	2	-	-	40	25	25	2
% Plants Showing		<u>Moderate Use</u>				<u>Heavy Use</u>				<u>Poor Vigor</u>				<u>%Change</u>				
'83		00%				00%				00%								
'89		00%				00%				00%								
'97		00%				00%				00%				+50%				
'02		100%				00%				00%								
Total Plants/Acre (excluding Dead & Seedlings)												'83	0	Dec:	-			
												'89	0		-			
												'97	20		-			
												'02	40		-			
Chrysothamnus viscidiflorus viscidiflorus																		
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	52	-	-	1	-	-	-	-	-	46	-	7	-	1766			53
	97	46	-	-	-	-	-	-	-	-	46	-	-	-	920			46
	02	7	-	-	-	-	-	-	-	-	7	-	-	-	140			7
M	83	126	-	-	-	-	-	-	-	-	126	-	-	-	4200	13	19	126
	89	205	-	-	13	-	-	-	-	-	157	-	26	35	7266	11	16	218
	97	297	-	-	-	-	-	-	-	-	297	-	-	-	5940	9	14	297
	02	241	2	-	-	-	-	-	-	-	243	-	-	-	4860	9	13	243
D	83	3	-	-	-	-	-	-	-	-	2	1	-	-	100			3
	89	47	-	-	1	-	-	-	-	-	30	-	15	3	1600			48
	97	21	-	-	-	-	-	-	-	-	15	-	-	6	420			21
	02	124	2	-	-	-	-	-	-	-	64	-	2	60	2520			126
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	580			29
% Plants Showing		<u>Moderate Use</u>				<u>Heavy Use</u>				<u>Poor Vigor</u>				<u>%Change</u>				
'83		00%				00%				00%				+60%				
'89		00%				00%				27%				-32%				
'97		00%				00%				02%				+ 3%				
'02		01%				00%				16%								
Total Plants/Acre (excluding Dead & Seedlings)												'83	4300	Dec:	2%			
												'89	10632		15%			
												'97	7280		6%			
												'02	7520		34%			

A Y G R E	Form Class (No. of Plants)	Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total								
		1	2	3	4		1	2									
Gutierrezia sarothrae																	
S	83	-	-	-	-	-	-	-	-	-	-	0		0			
	89	-	-	-	-	-	-	-	-	-	-	0		0			
	97	18	-	-	-	-	-	-	-	-	-	360		18			
	02	-	-	-	-	-	-	-	-	-	-	0		0			
Y	83	12	-	-	-	-	-	-	-	-	-	400		12			
	89	50	-	-	-	-	-	-	-	-	-	1666		50			
	97	45	-	-	2	-	-	-	-	-	1	940		47			
	02	-	-	-	-	-	-	-	-	-	-	0		0			
M	83	68	-	-	-	-	-	-	-	-	-	2266	13 12	68			
	89	161	-	-	-	-	-	-	-	-	-	5366	11 12	161			
	97	272	-	-	-	-	-	-	-	-	-	5440	10 13	272			
	02	13	-	-	-	-	-	-	-	-	-	260	7 7	13			
D	83	-	-	-	-	-	-	-	-	-	-	0		0			
	89	15	-	-	-	-	-	-	-	-	2	500		15			
	97	2	-	-	-	-	-	-	-	-	1	40		2			
	02	64	-	2	-	-	-	-	-	-	61	1340		67			
X	83	-	-	-	-	-	-	-	-	-	-	0		0			
	89	-	-	-	-	-	-	-	-	-	-	0		0			
	97	-	-	-	-	-	-	-	-	-	-	0		0			
	02	19	-	-	-	-	-	-	-	-	-	2640		132			
% Plants Showing		Moderate Use		Heavy Use		Poor Vigor		%Change									
'83		00%		00%		00%		+65%									
'89		00%		00%		02%		-15%									
'97		00%		00%		.62%		-75%									
'02		00%		03%		76%											
Total Plants/Acre (excluding Dead & Seedlings)											'83	2666	Dec:	0%			
											'89	7532		7%			
											'97	6420		1%			
											'02	1600		84%			
Juniperus osteosperma																	
Y	83	1	-	-	-	-	-	-	-	-	1	-	-	-	33		1
	89	1	-	-	-	-	-	-	-	-	1	-	-	-	33		1
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
M	83	1	-	-	-	-	-	-	-	-	1	-	-	-	33	47 30	1
	89	-	-	1	-	-	-	-	-	-	1	-	-	-	33	71 35	1
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	- -	0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	- -	0
% Plants Showing		Moderate Use		Heavy Use		Poor Vigor		%Change									
'83		00%		00%		00%		+ 0%									
'89		00%		50%		00%											
'97		00%		00%		00%											
'02		00%		00%		00%											
Total Plants/Acre (excluding Dead & Seedlings)											'83	66	Dec:	-			
											'89	66		-			
											'97	0		-			
											'02	0		-			

A Y G R E	Form Class (No. of Plants)	Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total								
		1	2	3	4											
Opuntia spp.																
S	83	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	89	1	-	-	-	-	-	-	-	-	-	-	-	33		1
	97	-	-	-	1	-	-	-	-	-	-	-	-	20		1
	02	-	-	-	-	-	-	-	-	-	-	-	-	0		0
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	89	8	-	-	1	-	-	-	-	-	-	-	-	300		9
	97	5	-	-	-	-	-	-	-	-	-	-	-	100		5
	02	2	-	-	-	-	-	-	-	-	-	-	-	40		2
M	83	14	-	-	-	-	-	-	-	-	-	-	-	466	8 17	14
	89	47	-	-	-	-	-	-	-	-	-	-	-	1566	8 10	47
	97	36	-	-	-	-	-	4	-	-	-	-	-	800	5 12	40
	02	48	-	-	-	-	-	-	-	-	-	-	-	960	5 10	48
D	83	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	89	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	97	1	-	-	-	-	-	-	-	-	-	-	1	20		1
	02	12	-	-	-	-	-	-	-	-	-	-	4	240		12
X	83	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	89	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	97	-	-	-	-	-	-	-	-	-	-	-	-	20		1
	02	-	-	-	-	-	-	-	-	-	-	-	-	0		0
% Plants Showing		<u>Moderate Use</u>		<u>Heavy Use</u>		<u>Poor Vigor</u>		<u>%Change</u>								
'83		00%		00%		00%		+75%								
'89		00%		00%		00%		-51%								
'97		00%		00%		02%		+26%								
'02		00%		00%		06%										
Total Plants/Acre (excluding Dead & Seedlings)												'83	466	Dec:	0%	
												'89	1866		0%	
												'97	920		2%	
												'02	1240		19%	
Pinus edulis																
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	89	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	97	1	-	-	-	-	-	-	-	-	-	-	-	20		1
	02	1	-	-	-	-	-	-	-	-	-	-	-	20		1
% Plants Showing		<u>Moderate Use</u>		<u>Heavy Use</u>		<u>Poor Vigor</u>		<u>%Change</u>								
'83		00%		00%		00%										
'89		00%		00%		00%										
'97		00%		00%		00%		+ 0%								
'02		00%		00%		00%										
Total Plants/Acre (excluding Dead & Seedlings)												'83	0	Dec:	-	
												'89	0		-	
												'97	20		-	
												'02	20		-	

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Purshia tridentata																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	89	1	-	-	-	-	-	-	-	-	-	-	-	-	33		1	
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
Y	83	1	-	-	-	-	-	-	-	-	1	-	-	-	33		1	
	89	1	-	1	-	-	1	-	-	-	3	-	-	-	100		3	
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	83	-	-	4	-	-	-	-	-	-	-	-	4	-	133	23	37	
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	
	97	-	3	-	-	2	1	-	-	1	7	-	-	-	140	8	39	
	02	-	-	-	-	-	2	-	-	-	2	-	-	-	40	9	13	
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	89	-	1	3	-	-	-	-	-	-	3	-	-	1	133		4	
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	02	1	-	1	-	-	-	-	-	2	2	-	-	2	80		4	
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	60		3	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'83		00%			80%			80%			+29%							
'89		14%			71%			14%			-40%							
'97		71%			29%			00%			-14%							
'02		00%			83%			33%										
Total Plants/Acre (excluding Dead & Seedlings)												'83	166	Dec:	0%			
												'89	233		57%			
												'97	140		0%			
												'02	120		67%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Quercus gambelii																		
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	97	-	-	-	2	-	-	-	-	-	2	-	-	-	40		2	
	02	3	-	-	-	-	-	-	-	-	1	-	2	-	60		3	
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	97	-	1	-	-	-	-	-	-	-	1	-	-	-	20	-	1	
	02	-	1	-	-	-	-	-	-	-	-	-	1	-	20	28 56	1	
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	02	-	-	1	-	-	-	-	-	-	-	-	-	1	20		1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'83		00%			00%			00%										
'89		00%			00%			00%										
'97		33%			00%			00%			+40%							
'02		20%			20%			80%										
Total Plants/Acre (excluding Dead & Seedlings)												'83	0	Dec:	0%			
												'89	0		0%			
												'97	60		0%			
												'02	100		20%			
Ribes spp.																		
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	97	2	-	-	-	-	-	-	-	-	2	-	-	-	40		2	
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'83		00%			00%			00%										
'89		00%			00%			00%										
'97		00%			00%			00%										
'02		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'83	0	Dec:	-			
												'89	0		-			
												'97	40		-			
												'02	0		-			